REMARKS

Claims 1-15 are currently pending in the application. Claims 1, 5, 8, 13 and 15 have been amended for the Examiner's consideration. The foregoing separate sheets marked as "Listing of Claims" shows all the claims in the application, with an indication of the current status of each.

The Examiner has rejected claims 1-15 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,516,301 to Aykin. As presented previously, each of independent claims 1, 4, 5, 8, 13 and 15 include the element of a reduction (claim 1) or minimization (claims 4, 5, 8, 13 and 15) of the total inventory cost of components, wherein the cost of at least one component differs from the cost of at least one other component. The amendment adding the cost difference between components was not entered prior to a Request for Continued Examination (RCE) because the Examiner's search had not encompassed the added limitation of different costs for different components. Having again examined the claims following the RCE, the Examiner maintains rejection under the disclosures of Aykin, arguing that

> Aykin teaches that the maintained inventory is determined to meet the desired order fill rate (col. 3, lines 33-40). Aykin further teaches that the order fill rate is based on forecasts of customer orders (see col. 2, lines 44-65), and is further based on the number of order types, and the use of each component in each order type (see col. 7, line 55 through col. 8, line 8). Therefore, it is inherent that if the inventory level of each component is optimized to meet the order fill rate, such that the forecasted customer need is meet without an excessive surplus inventory, the inventory cost is therefore minimized (emphasis supplied).

The applicant addressed this argument in the prior response, to wit:

> This is incorrect. Aykin determines component inventory levels required to meet a desired order fill rate (col. 3, lines 33-40). However, meeting a desired fill rate is not equivalent to minimizing the total inventory cost of components. **In fact, this can only be true if the unit cost is the same for every component**, which is not the

> case in practice, especially not in personal computer manufacturing where component costs are vastly different depending on the type of component (for instance, memory chips are relatively cheap while processors are expensive). It is to be noted that applicant's argument was that the present invention uses component cost information, whereas Aykin's method does not (**boldfaced emphasis** supplied).

The Examiner's responsive argument is as follows:

> Applicant further argues that Aykin only teaches the steps of meeting a desired fill rate, and that meeting a desired fill rate is only equivalent to minimizing the total inventory cost of components when the unit cost of every component is the same. Examiner respectfully disagrees. Aykin teaches a method of optimizing inventory, based on forecasted customer orders. If inventory is optimized to meet customer need, then it is inherent that inventory costs are also optimized, because there will be no excess inventory, and hence no excess inventory costs (emphasis supplied).
>
> Applicant also argues that Aykin does not distinguish different fill rates from component to component. Examiner respectfully disagrees. Aykin teaches steps to distinguish different fill rates from component to component in col. 7, line 55 through col. 10, line 14.

After careful review of what the Examiner has said, it is still the case that, under Aykin's method, meeting a desired fill rate is not equivalent to minimizing the total inventory cost of components unless the unit cost is the same for every component. This is inherent in Aykin's method. The novelty of the present invention is that it provides a way of significantly reducing the overall inventory cost of components by reducing the fill rate of a high-cost component only slightly, and does so in such a way that total inventory costs are minimized.

In the prior amendment – which has now been entered following a Request for Continuing Examination – additional language was added to the claims to make clear what was already implied, namely, that the present invention uses component cost information. Aykin's method does not. This amendment further emphasizes this point by making explicit that the difference in component costs makes a difference in the resulting base stock levels. As stated in the applicant's prior response:

In order to minimize the total inventory cost, the unit costs of components must be taken into consideration. Because the unit costs of components are different, it is possible to significantly reduce overall inventory cost by reducing the fill rate of a high-cost component only slightly. How this can be achieved in a way such that total inventory costs are minimized is described in the present invention. **It is not handled by Aykin's method, nor does Aykin describe or suggest how it could be handled. The "inherency" argument made by the Examiner applies to the proposition that the costs of the Aykin solution can be determined, but not to the proposition that Aykin's solution minimizes the total cost of the inventory of components where the cost varies from one component to another.** Aykin uses an order based concept of "fill rate." That is, an assembly plant measures its performance by the percentage of orders that can be filled from inventory at the time they come in. Aykin shows a methodology for ordering components, using the plant's desired order fill rate as an input, such that "the average order fill rate over time will be the target order fill rate value" (col 3, lines 16-18). **There is no implication here that the "target order fill rate" used as a measure of performance has anything at all to do with minimizing the total cost of the inventory of components, which is the problem addressed by the present invention.** (Emphasis contained in original)

The difference from Aykin may be understood by reference to Aykin's own terminology: in terms of "fill rate," Aykin is only concerned with "fill rate" at the order level, whereas for the present invention component inventory cost can be minimized by distinguishing the "fill rates" from component to component. For example, as stated above, it is possible – and the present invention shows how and claims the methodology – to reduce total inventory costs of components significantly by reducing only slightly the "fill rate" of an expensive component. Thus, when an order comes in, it may not be possible to start assembling the order because an expensive component is not in stock. The decision to adopt the strategy of minimizing total inventory costs in this fashion is quite different from – and may even be inconsistent with – the strategy of achieving a target "order fill rate."

In order to clarify this distinction from Aykin, the claims have been amended to make explicit this context of the present invention, where the cost of one component may be quite different from the cost of another component. Contrary to the Examiner's contention,

> achieving minimization of inventory cost as described in the present invention is not "inherent"in an inventory control system. Whether the method of the present invention could be applied under the constraint of achieving a target "order fill rate" is not of concern to the present application. Similarly, however, the total cost minimization methodology of the present invention is not suggested by Aykin, notwithstanding that the inventory shown by Aykin must necessarily have a cost. It is this cost which is "inherent," but there is no basis in the record for equating this cost to the cost minimization methodology of the present invention.

The Examiner notes the obvious truth that it is common for different components to have different costs. However, as is also commonly known, different methodologies make different assumptions. The Examiner concedes that Aykin does not expressly state that the different components have different costs. More importantly, however, Aykin does not use these cost differences in his method. This is not an accident. These differences are not important for Aykin's method. If, as the Examiner suggests, "the step of using components with different costs" were simply added to Aykin's method, Aykin's method would not know what to do with this appendix. Consequently, the Examiner's assertions about the obviousness of component cost differences is beside the point. For Aykin, this additional step would be a useless appendage. There is no obvious way to integrate this additional step into the Aykin method. This defect is fatal to the Examiner's argument. As will be readily appreciated, a *prima facie* case of obviousness requires that the pieces assembled by the Examiner are at least operable. Adding an element that is not operable with the disclosed method does not make a *prima facie* case.

The citations to Aykin used by the Examiner to support his "inherency" argument further emphasize the omission of a connection between component costs and the Aykin method. The Examiner cites col. 3, lines 33-40, for essentially the same proposition noted by the applicant, namely, that Aykin determines the component inventory levels required to meet a desired order fill rate. It should be

noted that there is no suggestion here regarding component costs, only of component inventory levels. Next, the Examiner cites col. 2, lines 44-65, to show that the order fill rate is based on forecasts of customer orders. It is clear, however, that this is customer orders for end products, not components (col. 2, lines 46-47). Finally, the Examiner cites col. 7, line 55, through col. 8, line 8, to show that the order fill rate is further based on the number of order types and the use of each component in each order type.

From these premises the Examiner then argues that inventory cost minimization follows from optimization of the inventory levels of each component. Respectfully, this is irrelevant. It says nothing about whether a further reduction in inventory cost can be obtained by the methods of the present invention, by considering component costs where the costs of different components are different. The Examiner appears to think that "optimization" is a single valued concept, and that if Aykin's method is alleged to produce an optimum component order fill rate under the assumptions provided in the Aykin model, that this necessarily implies optimization of the inventory cost of components (trivially obtained by appending a component cost calculation step to the Aykin method).

But in the present invention the costs of components are an integral part of the method, not a trivial appendage. This is shown graphically by the chart in Appendix A, where the inventors have used the PC case study described beginning at page 26, line 23, to demonstrate the improved results of the present invention over the Aykin model. In order for Aykin to support an obviousness rejection of the present invention, the Examiner must show that component costs can be integrated into the Aykin method so as to reduce the overall inventory cost of components. The Examiner has not done so, as the chart in Appendix A demonstrates. Instead, the Examiner has made a bootstrap argument that the overall inventory cost of components must have been optimized, even though component costs have not been

considered in the Aykin model, and that all that is needed is to tack on a trivial calculation step at the end to show what those costs are. The present invention proves the falsity of this line of thinking, because it shows that the overall inventory cost of components can be reduced by using a method and model whose optimization logic is based upon the differences in the costs of individual components. Aykin's method does not have an optimization logic based on the differences in the costs of individual components, and the Examiner's argument simply asserts that such an optimization logic would be redundant. The amendment to the independent claims makes this distinction clear (except for claim 5, where because of the detailed formulation the explicit dependence of the result upon the difference in component costs is already clear).

The Examiner has not shown that the method of Aykin could be modified so that its optimization logic would take account of differences in the costs of individual components, nor has the Examiner provided a motivation from within Aykin for doing so (apart from impermissible hindsight), nor a likelihood of success in pursuing such a modification. Instead, the Examiner has speculated that the optimization logic of Aykin makes redundant the optimization logic of the present invention, and that this redundancy is so solid that the omission in Aykin of any attention to component costs can be remedied by the trivial addition to Aykin of a simple cost calculation step.

The Examiner is reminded of the basic considerations which apply to obviousness rejections as set out in MPEP 2141. Specifically, "When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

"(A) The claimed invention must be considered as a whole;

"(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

"(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

"(D) Reasonable expectation of success is the standard with which obviousness is determined."

The incorrectness of the Examiner's argument may be further understood with reference to the applicant's statement – made in a prior response and repeated above – that "under Aykin's method, meeting a desired fill rate is not equivalent to minimizing the total inventory cost of components unless the unit cost is the same for every component" (emphasis supplied). Thus, Aykin does indeed provide an equivalent cost optimization result in the special case where the unit costs are the same for all components. But this special case is excluded from the claims of the present invention by the limitation requiring that the cost of at least one component differs from the cost of at least one other component. By the same token, Aykin necessarily fails to provide or suggest an equivalent cost optimization result where component costs differ. The novelty of the present invention with respect to the disclosures of Aykin is confirmed by having an optimization logic that is based upon differences in the costs of different components, a methodology that is not disclosed or suggested by Aykin. The proposed addition of component costs, argued by the Examiner, is not the same as a showing of *prima facie* obviousness from Aykin.

Consequently, it is submitted that the Examiner's rejection of independent claims 1, 4, 5, 8, 13 and 15 is overcome, and that the same conclusion applies to the remaining claims which depend from these independent claims.

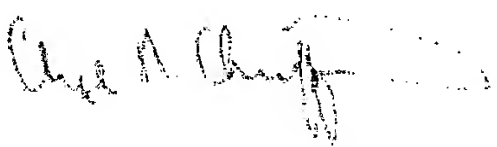
In view of the foregoing, it is requested that the application be reconsidered, that claims 1-15 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at 703-787-9400 (fax: 703-787-7557; email: clyde@wcc-ip.com) to discuss any other changes deemed

necessary in a telephonic or personal interview. It is specifically requested that the Examiner allow an interview, in which one of the inventors can further explain the chart provided in Attachment A, and its significance as an illustration of the applicant's point that Aykin's method faills to provide cost-optimal inventory policies when component costs are not identical.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Deposit Account 50-0510 (IBM-Yorktown).

Respectfully submitted,



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APPENDIX A

building block	unit cost	SLA (invention)	safety factor (invention)	inventory in units (invention)	Inventory cost (invention)	SLA (Aykin)	safety factor (Aykin)	inventory in units (Aykin)	Inventory cost (Aykin)
		91%				91%			
BB1	$ 705		1.71	549	$ 386,982		2.33	748	$ 527,291
BB2	$ 36		2.97	965	$ 34,846		2.33	757	$ 27,[illegible]
BB3	$ 267		2.01	101	$ 26,821		2.25	113	$ 30,024
BB4	$ 468		2.01	201	$ 94,092		2.25	225	$ 105,327
BB5	$ 344		2.1	632	$ 217,284		2.36	710	$ 244,186
BB6	$ 695		1.37	69	$ 47,608		1.53	77	$ 53,168
BB7	$ 99		2.6	845	$ 83,655		2.33	757	$ 74,968
BB8	$ 99		2.6	835	$ 82,625		2.33	748	$ 74,045
BB9	$ 99		3.01	301	$ 29,799		2.78	278	$ 27,522
BB10	$ 99		2.6	845	$ 83,655		2.33	757	$ 74,968
BB11	$ 135		2.5	280	$ 37,800		2.2	246	$ 33,264
BB12	$ 172		2.41	725	$ 124,771		2.36	710	$ 122,182
BB13	$ 37		3.35	335	$ 12,395		2.78	278	$ 10,286
BB14	$ 99		2.6	835	$ 82,625		2.33	748	$ 74,[illegible]
BB15	$ 99		3.01	301	$ 29,799		2.78	278	$ 27,5[illegible]2
Bb16	$ 99		2.7	678	$ 67,092		2.44	612	$ 60,632
BB17	$ 99		2.49	500	$ 49,549		2.16	434	$ 42,982
Total				**8,996**	**$ 1,491,398**			**8,477**	**$ 1,609,747**